Inventor(s): ROGER DE LATHOUWER

Invention: SUITCASE WITH ROLLERS

Horst M. Kasper, his attorney
13 forest Drive , Warren, N.J. 07059
tel: (908) 757-2839; (908) 668-5262
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TRANSLATION OF PCT APPLICATION

AS FILED

Suitcase with rollers

This invention relates to a vertical rolling suitcase. This type of suitcase has proved to be particularlyuseful and has experienced an increasing success over thesepast years.

Nevertheless a reduction in weight is always being sought which does not detract from the solidity of thesuitcase. Moreover, in manufacturing and shipment, thesuitcases being essentially bulky articles, it is alsoimportant for transportation and deliveries to the retailers to be able to group several suitcases of one and the same type but of different dimensions by stacking one in the other. It is thus common practice, for a suitcase of large dimensions, to be able to contain two suitcases of lesser dimensions of the same model thus constituting a set of suitcases, the smaller being contained in the other. The difference in size must nevertheless usually be at least 9 cm in order to enable this type of stacking of vertical suitcases (instead of 5 cm for classic suitcases of the horizontal type).

This invention aims at improving these two qualities which are the lightness and the minimum bulkiness per unit

during transportation.

According to the invention, a difference in weight is indeed observed with an equivalent suitcase of the former state-of-the-art of the order of 30 to 40% (depending on the dimensions). Moreover stacking-up is considerably improved. Indeed, up to 6 different dimensions of one and the same set of suitcases can be contained one in the other for transportation, the differences in dimensions can decrease to 3 cm between 2 consecutive sizes.

In the traditional suitcase, the rolling and traction system is not part of the basic structure of the suitcase. The faces rigidified by plastic or by wood are riveted onto a frame which hoops the suitcase. The rolling system is made to form one piece with the frame by means of hard and indeformable elements. The result is a heavy and relatively indeformable suitcase.

The purpose of the invention is to avoid a double use between the frame and the rolling system. According to the invention, the rolling system itself provides the vertical rigidity of the suitcase.

A suitcase is thus put forward whose volume is constructed around telescopic tubes incurvated on the bottom and no longer around a frame. The volume is no longer rigid

as in a "box" type of conception. Indeed the flanks are supple: the two sides (lateral faces) are hooped by a metallic retaining ring and can be flattened while regaining their form as soon as the pressure ceases. The suitcase therefore has elastic lateral sides. It is very light and very strong because it can deform its width without breaking.

The plastic reinforcing parts of the upper and lower faces are rigidified by their curvature and their extension on the rear face. The back of the suitcase between the metallic retaining rings and the telescopic tubes can advantageously remain partially without plastic support in order to achieve a maximum lightness.

According to one aspect of the invention, a vertical suitcase of essentially parallelepipedal form is put forward without central frame in steel girdling it inside, suitcase of which the faces consist of supple material, preferably a fabric. The rigidification of the suitcase is essentially achieved by two tubes joining a lower part or shell and an upper part or shell, extending at least partially into the planes perpendicular to the aforesaid tubes, which will be covered by the fabric on their outer faces, as well as by two metallic retaining rings, tightening the fabric of the

lateral faces. The tubes are preferably guides for the rods of a retractable handle provided in the upper part or shell, the upper and lower parts or shells being in the form of a plate or sheet of plastic of ~~incurvated~~ form defining at least the upper and lower rounded arrises of the rear face of the suitcase.

The upper and lower parts or shells can be preformed, for example by molding. Preferably these parts or shells will be in semirigid plastic.

Advantageously indeed the upper and lower shells consist of two rectangular plates or sheets of semirigid plastic whose incurvated form is principally imposed by the, preferably metallic, lateral retaining rings. Advantageously, the lower shell is also incurvated by the curved extremities of the above mentioned tubes. The upper shell is maintained incurvated by being fixed in the dorsal face by the above mentioned tubes and in the plane of the upper face by a preferably metallic traverse perpendicular to the retaining rings.

These parts or shells therefore comprise the upper and lower rounded arrises of the rear face without necessarily incorporating a substantial part of this latter face. On the other hand the shells form the totality or a

substantial part of the upper and lower faces.

According to one embodiment, the central part of the rear face can also comprise a plastic plate or sheet which nevertheless does not substantially contribute to the rigidity of the whole but provides an aesthetic effect. Indeed, according to this variant, the objects contained in the baggage will not deform the fabric face as much. This plate can be less thick than the above mentioned shells. According to another embodiment, the two shells are integrated into one single piece with the aforementioned central part.

The metallic retaining rings are provided in the form of two lateral frames of rectangular form with rounded corners hooping the lateral fabric faces.

The plastic sheets can advantageously consist of polyethylene, of a few millimeters thickness (approximately 3 mm, preferably between 2.5 to 3.5 mm). These sheets, or in any case the upper sheets are sufficiently supple in order to be able to incurvate under the effect of the lateral frames in metallic retaining rings. They are therefore not necessarily previously thermo-formed.

The utilization of semirigid sheets instead of molded pieces enables an economy of weight and a more economical

manufacturing.

According to another aspect of the invention, preferably 3 wheels are provided in line placed in the incurvation of the lower shell between and on either side of the telescopic tubes. This advantageously enables the lack of rigidity of the lower shell to be compensated and greatly contributes to the stability of the whole. The wheels partially fit into the openings provided in the incurvation of the lower shell to which they are attached. The central wheel enables a better stability and a more efficient rolling to be achieved by avoiding the "waddling" effect notwithstanding the lightness of the lower shell. The lateral wheels can advantageously be attached close to the corners, in wheel recesses covering the corners and protecting them from shocks. Moreover the greater width of the track improves the stability.

Conventionally, in addition to the telescoping handle, one or more handles can be provided sewn or riveted onto the upper face (for the vertical position) or a lateral face (for transportation and horizontal position).

According to the invention, the handle on the upper face will be attached to the reinforcement bar extending over the entire width of the baggage. The part will be a

piece of metal, e.g. slotted, or in plastic, for example with a honeycomb structure. On the lateral face the handle will preferably be attached to a simple reinforcement of reduced size in the form of an area of raised stitching in the central part.

According to the invention the stackability is especially improved by the fact that the upper shell is advantageously cut out in such a manner that it does not entirely cover the upper face. Because of this the front portion of the upper face, which can correspond to almost 50%, preferably 30 to 40%, of the surface of this, is more supple as only consisting of fabric held by the lateral metallic retaining rings.

Moreover, the lateral faces hooped by a perimeter in metal (retaining ring) are supple and can adapt with more play in order to receive the lateral faces of suitcases of lesser dimensions. Indeed, there is no central frame in steel holding these lateral faces and provided between the two large faces, equidistance from these.

According to one aspect of the invention indeed, the suitcases are stackable head to foot. The wheels of a smaller suitcase nest into the supple part of the upper face of the larger suitcase. The number of smaller suitcases

contained in a suitcase of given dimension can thus be doubled. Up to 6 suitcases can thus be "stacked" whose dimensions only vary by pitches of 3 to 6 cm according to the type of handle (instead of 9 cm to 10 cm with the closest known systems for vertical suitcases).

The invention will be better understood by examining the drawings submitted in appendix, only by way of example of preferred embodiments, in which

- figure 1 represents a diagram of the structure of a suitcase according to the invention, the covering fabric not being represented

- figure 2 is an exploded view of the various principal elements,

- figures 3a to 3c represent in perspective suitcases according to the invention in vertical position with a retractable handle capable of being totally integrated into the suitcase or not,

- figure 4 illustrates in perspective the internal stacking of one suitcase in the other,

- figure 5 is a sectional drawing of a stacking according to figure 4.

In fig. 1 the structure can be distinguished partially

exploded, in perspective, of a suitcase of essentially parallelepipedal form disposed horizontally on its rear face 7. A lower shell 2′ and an upper shell 2 are connected by rigid telescopic tubes 3 which serve as guides for the rods 14, in this example rectangular section rods, of a U-shaped retractable handle 4. Two lateral frames 1 of supple metallic retaining rings also contribute to the rigidity of the whole. The lower shell is incurvated under the influence of incurvation, here with flattening, of the extremity of the tubes 3 in order to form the rounded arris 12′. The openings 5′ can also be distinguished in the shell 2′ for receiving and attaching the external lateral wheel spindle support arches 5 emerging in the incurvated part of the lower shell. Lower 6 and rear feet 6′ of the face 7 are also provided. The upper shell 2 does not extend over the totality of the upper face of the suitcase covered with supple material, but only over approximately 60%, characteristic of the invention which facilitates the head-to-foot stacking. Under the extremity of the shell 2, a rigid reinforcing traverse can also be distinguished in 18 in the form of a metallic slotted slat whose presence is important for maintaining the rigidity of the upper shell.

Fig. 2 is an exploded schematic view which further

clarifies the structure of a suitcase according to the invention. The suitcase is represented vertically. The two frames of metallic retaining rings 1, the respective upper and lower shells 2 and 2′ form the arrises 12 and 12′, the 3 wheels 5 and the telescopic tubes 3 can be distinguished. The attachment parts 8 on the shell 2 at the upper extremity of the telescopic tubes as well as the parts 17 which work together with the parts 8 for the attachment of the guides 3 in the attachment areas 10, 10′ of the shells to these tubes 3, in this example by means of a rectangular reinforcement element 11, possibly riveted, are also represented. It will nevertheless also be noted that the reinforcing parts 11 and 11′ are not indispensable. On the other hand, the reinforcing part 18 in slotted metal which extends over the entire width, and located below a possibly provided classic handle, significantly contributes to the structure of the baggage. Fig. 2 constitutes a variant in relation to fig. 1 to the extent that the tubes each consist of an at least partially telescopic straight part and an incurvated part made to form one piece in 9 by a means know in itself.

Figs. 3a to 3c represent in perspective the final aspect of some suitcases according to the invention. Each time the rear face 7, the feet 6′ and the wheels 5 can be

distinguished. An opening zipper 20 of the front face 27 of the suitcase extends up to at least the aforesaid front part 16, which enables a partial opening of the upper face. Fig. 3a illustrates a suitcase for which the handle of rectangular section can be retracted into a rigid housing and in a way be made flush with the shell 2. In figure 3b, the handle remains slightly protruding. In fig. 3c, the handle and its circular section rods can be entirely inserted into a pocket 15 inside the suitcase, which can be reclosed with a flap 15' and a zipper. In this latter case, as with the suitcase from fig. 3a, the upper plate is cut out for this purpose. The solution from 3c enables the most reduced dimension pitch for the head-to-foot stacking of the suitcases.

Fig. 4 is a view in perspective of a head-to-foot stacking-up of two suitcases a and b, of slightly different dimensions, the front face 27a of the larger suitcase being folded back toward the outside by opening a zip fastener 20a. Inside the suitcase a the back 7b of the suitcase b can be distinguished, with the three wheels 5b and the retracted handle 4b. The part 16 extending the front face 27 is destined to cover the wheels 5b after closing the suitcase a.

Fig. 5 is a schematic sectional drawing of a stacking according to fig. 4. The wheels 5a do not prevent the positioning of the suitcase b inside the suitcase a, because the semirigid shell 2b does not extend over the entirety of the upper face thus leaving a supple part 16′ suitable for conforming to receive an inside part of the wheels 5a.